

an estimator [(105; 302; 410) for calculating] that calculates a signal representative of an estimate rhythm of the received auscultation signal[; characterized in that], the estimator [is adapted for] selecting at least a part of the biased auscultation signal as a first signal and calculating [the] a conformity between the first signal and the biased auscultation signal.

- Claim 2, line 1, change "An" to --The--, and delete "characterized in"; and
line 2, delete "that", and change "calculates" to --applying--.
- Claim 3, line 1, change "An" to --The--, and delete "characterized in"; and
line 2, delete "that", and change "represents" to --representing--.
- Claim 4, line 1, change "An" to --The--, and delete "characterized in"; and
line 2, delete "that", and change "calculates" to --applying--.

5. (Twice Amended) [An] The apparatus according to claim 1, [characterized in that the] a quality of the received auscultation signal [is] being validated by verifying at least one [least] of [the following] three items in a signal representing [the] a conformity of the received auscultation signal, the three items comprising:

- a) time differences between located extreme values [must be] being within predetermined limits;
- b) minimum and maximum time differences in proportion to [the] a mean of the time differences [must be] being within predetermined limits; and
- c) [the] a magnitude of [the] a correlation result [of the correlation] at the extreme values location [must be] being within predetermined limits.

6. (Twice Amended) [An] The apparatus according to claim 1, [characterized in that] the bias processor [comprises] comprising a filter [(101; 401) for calculating] that

calculates one of an A-weighted version of the received auscultation signal [or] and an approximated A-weighted version of the received auscultation signal.

Claim 7, line 1, delete "An" to --The--, and delete "characterized in";
 line 2, delete "that", and change "is" to --being--;
 line 3, delete "means of"; and
 line 4, after "the" insert --received--.

8. (Twice Amended) [An] The apparatus according to claim 1, [characterized in that] the bias processor [comprises] comprising an adaptive band-pass filter [(512) for filtering] that filters signals provided by the envelope detector₁[,] said adaptive band-pass filter [at least] having at least an upper pass-band and a lower pass-band respectively selectable, and[,] said adaptive band-pass filter comprising] a controller [(513) selecting] that selects the lower pass-band when a relatively large fraction of a signal input to the adaptive band-pass filter [is low-frequency] has a low frequency and [selecting] selects the upper pass-band when a relatively low fraction of a signal input to the band-pass filter has a low frequency [is low frequent].

9. (Twice Amended) [An] The apparatus according to claim 1, [characterized in that] the received auscultation signal [comprises] comprising samples that arrive at a sample rate₁ [and in that] the apparatus [comprises] further comprising:

a synchronous processor [(301; 409) operating] that operates at a rate corresponding to the sample rate, and [further comprising]

an asynchronous processor [(302; 410) operating] that operates at time intervals [that are] initiated by a request.

10. (Twice Amended) [A stethoscope] The apparatus according to claim 1, comprising a stethoscope [means for estimating the] that estimates a rhythm in [an] the received auscultation signal.

11. (Amended) An apparatus for estimating [the] a rhythm in auscultation signals, comprising:

b3 a bias processor [(106; 301; 409 for receiving] that receives an auscultation signal and [providing] provides a biased auscultation signal, [;] said bias processor comprising an envelope detector; and

an estimator [(105; 302; 410) for calculating] that calculates a signal representative of an estimated rhythm of the received auscultation signal [; characterized in that], the bias processor [comprises] comprising a filter [(101; 401)] having a frequency response corresponding to at least one of an A-weighting [or] and an approximated A-weighting[, at least] for a frequency range of interest.

Claim 12, line 1, change "An" to --The--, and delete "characterized in";
line 2, delete "that", and change "is" to --being--; and
line 3, delete "(101; 401)".

b4 13. (Twice Amended) [An] The apparatus according to claim 11, [characterized in that] the frequency range of interest [is the] being in a frequency range [below] of less than 2000Hz.

Claim 14, line 2, after "ing" insert --;--, and delete "the steps of";
line 3, after "signal" insert --;--, and delete "and";
lines 6-7, delete "; characterized in that";
line 8, change "is" to --being--; and
line 10, change "the" (first occurrence) to --a--.

b5 15. (Amended) [A] The method according to claim 14, [characterized in that the estimator calculates] further comprising:

applying a cross-correlation function to calculate the representative signal.

Claim 16, line 1, change "A" to --The--, and delete "characterized in";
line 2, delete "that", after "the" (first occurrence) insert --selected--, and
delete "repre-"; and
line 3, change "sents" to --representing--.

B6 17. (Amended) [A] The method according to claim 14, [characterized in that the
estimator calculates] further comprising:

applying an auto-correlation function to calculate the representative signal.

18. (Twice Amended) A method according to claim 14, [characterized in that the]
further comprising:

validating a quality of the received auscultation signal [is validated] by verifying
at least one of [the following] three items in a signal representing [the] a conformity of the
received auscultation signal, the three items comprising:

- a) time differences between located extreme values [must be] being within
predetermined limits;
- b) minimum and maximum time differences in proportion to [the] a mean of the
time differences [must be] being within predetermined limits; and
- c) [the] a magnitude of [the] a correlation result [of the correlation] at the
extreme values location [must be] being within predetermined limits.

19. (Twice Amended) [A] The method according to claim 14, [characterized in that
the method] further [comprises a step of] comprising:

calculating one of an A-weighted version of the received auscultation signal [or]
and an approximated A-weighted version of the received auscultation signal.

Claim 20, line 1, change "A" to --The--, and delete "characterized in that";

line 2, after "the" (second occurrence) insert --received--, and change "is" to --being--;

line 3, change "by means of" to --using--; and

line 4, after "the" insert --received--.

21. (Twice Amended) [A] The method according to claim 14, [characterized in that the method] further [comprises the step of] comprising:

filtering the biased auscultation signal [by means of a] using an adaptive band-pass filter[,] said adaptive band-pass filter [at least] having at least an upper pass-band and a lower pass-band respectively selectable[; said adaptive band-pass filter], and being controlled such that the lower pass-band is selected when a relatively large fraction of a signal input to the adaptive band-pass filter [is low-frequent] has a low frequency and such that the upper pass-band is selected when a relatively low fraction of a signal input to the band-pass filter [is low-frequent] has a low frequency.

22. (Twice Amended) [A] The method according to claim 14, [characterized in that] the received auscultation signal [comprises] comprising samples that arrive at a sample rate, [and in that] the method [comprises] further comprising:

executing synchronous steps [being executed] at a rate corresponding to the sample rate, and [further comprising]

executing asynchronous steps [operating] at time intervals [that are] initiated by a request.

23. (Amended) A method for estimating [the] a rhythm in auscultation signals, comprising: [the steps of]

receiving an auscultation signal; [and]

providing a biased auscultation signal; and